ELEMENTS OF
OPTICAL MINERALOGY

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AN INTRODUCTION TO
MICROSCOPIC PETROGRAPHY

by

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PART II · DESCRIPTIONS OF MINERALS
With Special Reference to Their Optical and Microscopical Characters

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ABBREVIATIONS AND SYMBOLS

(Chemical symbols and names of periodicals are not included.)

A, B = optic axes of biaxial crystals.
A (in a chemical formula) = one atom of any metallic element.
a = front and rear coordinate or crystal axis.
α = angle between the positive directions of the b and c crystal axes.
Alter. = alterations.
B = birefringence.
B (in a chemical formula) = one atom of any element, usually a metal, in oxides, halides, and sulfides, and an acid-forming element in other compounds.
b = right and left coordinate or crystal axis.
B P. = boiling point.
Bx = bisectrix.
β = angle between the positive directions of the a and c crystal axes.
C (after refractive index) = red light (656 mμ).
°C. = degrees Centigrade.
c = vertical coordinate or crystal axis.
γ = angle between the positive directions of the a and b crystal axes.
Char. = characters.
Class. = classification.
Comp. = composition.
D (after refractive index) = yellow light of the D doublet (589 mμ).
Diag. = diagnostics.
E = extraordinary ray.
2E = the apparent optic axial angle measured in air.
F (after refractive index) = blue light (486 mμ).
F. = fusibility.
G. = specific gravity.
H. = hardness.
2H = the apparent optic axial angle measured in oil.
Hex. = hexagonal.
Incl. = inclusions.
Inver. = inversion.
Isom. = isometric.
Li (after refractive index) = lithium (red) light (671 mμ).
λ = wave length of monochromatic light.
m = an indefinite number.
μ = micron; a thousandth of a millimeter.
mμ = millimicron; a millionth of a millimeter.
Max. = maximum.
Mono. = monoclinic.
M.P. = melting point.
N = index of refraction.

Na (after refractive index) = sodium (yellow) light (589 mμ).

N_E = index of refraction for the extraordinary ray.

N_O = index of refraction for the ordinary ray.

N_X = index of refraction for the X ray (fast) = α of German writers and N_p of Parts I and III.

N_Y = index of refraction for the Y ray (intermediate) = β of German writers and N_m of Parts I and III.

N_Z = index of refraction for the Z ray (slow) = γ of German writers and N_g of Parts I and III.

n = an indefinite number.

O = ordinary ray.

Occur. = occurrence.

Opt. = optic.

Orth. = orthorhombic.

p = an indefinite number.

Phys. = physical.

Prop. = properties.

r = red (light).

$r > v$ (or $r < v$) (after optic axial angle) means that the optic axial angle in red light is greater than (or less than) the optic axial angle in violet light.

Rhom. = rhombohedral.

Struc. = structure.

Tetr. = tetragonal.

Tl (after refractive index) = thallium (green) light (535 mμ).

Tric. = triclinic.

Trig. = trigonal.

U.C. = unit cell; U.C. 4 means that the unit cell contains 4 times the formula atoms.

2V = the true angle between the optic axes, or the optic axial angle.

v = violet (light).

X (in a chemical formula) = one atom of an element like S, O, Cl, F (also OH).

X = the vibration direction of the fast ray; also that ray.

X > Y (or X < Z), etc. = absorption greater (or less) for the fast ray than for the the intermediate (Y) or slow (Z) ray.

Y = the vibration direction of the intermediate ray; also that ray.

Z = the vibration direction of the slow ray; also that ray.

$\wedge$ = angle; for example, $Z \wedge c$ = the angle between Z and c.

$>$ = is greater than.

$<$ = is less than.

100, 010, 001, 110, etc. = Miller symbols of one or more crystal planes (or faces).

$\{100\}$, $\{010\}$, $\{001\}$, $\{110\}$, etc. = Miller symbols of crystal forms.

$\perp$ = normal to.

$\|$ = parallel; this is often omitted, as in the statement: "the optic plane is 010"; or it is replaced by an equals sign, as in "X = a."

(+) or (−) before 2V (or 2E or 2H) means that the optic sign of the mineral is plus or minus.